

CABLES AND CONNECTORS

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Network cables and connectors

The main reason why we set up a network is for easy transfer of digital information from one computing device to another. We can set up a network in two forms: either wireless or wired. For wired network, we make use of some cables that are linked together by connectors to facilitate communication. Also for wireless, infrared, or radio-frequency transmitter are used to enhance communication but they are usually low speed compared to wired networks.

Cables

A cable is the medium through which information transverses from one network device to another. There are several types of cable which are commonly used with Local Area Networks (LANs).

1. Twisted Pair: It is a type of wiring in which two conductors are twisted together for the purposes of cancelling out electromagnetic interference (EMI) form external sources. Twisted pair is the ordinary copper wire that connects home and many business computers to the telephone company. To reduce crosstalk or electromagnetic induction between pairs of wire, two insulator copper wires are twisted around each other.
2. Coaxial Cable: It is an electrical cable with an inner conductor surrounded by a flexible, tubular insulating layer and a tubular component parts. A plastic layer provides insulation between the centre conductor and a braided metal shield. The metal shield helps to block any outside interference.



Although, coaxial cabling is difficult to install, it is highly resistance to signal interference. In addition, it can support greater cable lengths between network devices than twisted pair cable. It exists in two types: thin and thick coaxial cables.

3. Fibre Optic: It is long, thin strands of very pure glass about the diameter of a human hair. They are arranged in bundles called optical cables and used to transmit light signals over long distances. It has the ability to transmit signals over much longer distances than coaxial and twisted pair. It also has capability to carry information at

vast greater speeds. Fibre optic cables are being employed in our modern day GSM, telephone system, cable TV system or internet.



4. Telephone Cable: This is a type of male connector used to connect a telephone to the telephone wiring in a home or business, and in turn to a local telephone network. It is inserted into its commonly fixed to a wall or baseboard. The standard for telephone plugs varies from country to country, though the RJ11 "modular connector" has become by far the most common. Telephone wires are usually paired copper wires and are normally packed together in a thick black cable.

Connectors

A registered jack (RJ) is a standardized physical network interface-both jack construction and wiring pattern-for connecting telecommunications or data equipment to a service provided by a local exchange carrier or long-distance carrier. The standard designs for these connectors and their wiring are named as RJ-11, RJ-45 etc.

- (a) **RJ-45:**The standard connector for unshielded twisted pair cabling is a RJ-45 connector. RJ45 connectors are most commonly seen with Ethernet cables and networks.



RJ45 connectors feature eight pins to which the wire strands of a cable interface electrically. Standard RJ-45 **pinouts** define the arrangement of the individual wires needed when attaching connectors to a cable.

- (b) **RJ11:**it standard dictates a 2-wire connection, whereas RJ14 uses a 4-wire configuration, and RJ-25 uses six wires. Plugs and jacks of these type are often called modular connectors, which originally distinguished them from older telephone connectors which were very bulky or wired directed to the wall and therefore not accommodating of modular systems.



- (c) T-Connectors: it is mostly used with coaxial cables such as RG-58 A/U cable mainly used with the 10Base-2 Ethernet system. It is a type of electric connector that joins a conductor to another conductor at right angles to it. It has a T-shape.



Evaluation

1. What is the reason for networking.
2. Enumerate three types of network cables.
3. Briefly describe any two types of network connectors.

Computer cables and connectors.

Computer cables form the connections between computer systems and their peripheral devices. They are physical implementations of interface standards for transmitting data between computers and peripherals such as keyboards, display devices, mass storage units, and printers.

- (i) **Power cables:** it is an assembly of two or more electrical conductors, usually held together with an overall sheath. The assembly is used for the transmission of electronic power. Power cables may be installed as permanent wiring within buildings, buried on the ground, run overhead or exposed.



- (ii) **Data cables** – Data cables comprises all cables needed for the input of data into the computer and the output of data from the computer system. They connect the input and output devices of a computer.
Printer cable: it refers to the cable that carries data between a computer and a printer. There are different types of cables depending on your printer e.g. *parallel, firewire, USB and so on.*



Universal Serial Bus (USB): You can use USB cables to connect most new devices to your computer including flash memory sticks, portable media players, internet modems and digital cameras.

Computer accessories like mice, keyboards, webcams, portable hard-drives, microphones, printers, scanners and speakers can also be connected to the computer through USB ports. Additionally, USB cables are also used for charging a variety of gadgets including mobile phones or for transferring data from one computer to another.



Monitor cable: it is used to connect the monitor (VDU) to the CPU. Attached at both end of the cable is a connector which could be either pin (male plug) or holes (female plug).



Serial cable: it is used to transfer information between two devices using serial communication. A serial communication is the process of sending data one bit at a time sequentially, over a communication channel or computer bus. Serial communication is used for all long-haul communication and most computer networks where the cost of cables and synchronization difficulties made parallel communication impractical.

